

REMARKS

Claims 1-16 and 23-34 are pending in the present application. Claims 1, 3, 5, 7, 9, 11, 13 and 15 have been amended. Claims 31-34 have been presented herewith.

Priority Under 35 U.S.C. 119

As noted in the Amendment dated June 17, 2003, the Office has not acknowledged the Claim for Priority under 35 U.S.C. 119. Accordingly, enclosed is a copy of a Claim of Priority Letter dated September 27, 2002, submitted along with Japanese priority application 2000-104733. Also enclosed is a dated, stamped postcard receipt provided as evidence that the Claim of Priority Letter has been received by the U.S. Patent Office. **The Examiner is respectfully requested to acknowledge receipt of the certified copy of the priority document, and to confirm on the record that the claim for priority is complete.**

Information Disclosure Statement

As noted in the Amendment dated June 17, 2003, the Office has not acknowledged receipt of the Information Disclosure Statement dated April 5, 2001. Accordingly, enclosed is a copy of the Information Disclosure Statement and corresponding PTO-1449 form filed along with the present application on April 5, 2001. Also enclosed is a copy of dated, stamped postcard receipt provided as evidence that the Information Disclosure Statement was received by the U.S. Patent Office. **The**

Examiner is respectfully requested to acknowledge receipt of the Information Disclosure Statement dated April 5, 2001, and to confirm on the record that the corresponding documents have been considered and will be cited of record in the present application.

Claim Rejections-35 U.S.C. 103

Claims 1, 3, 5, 7, 9, 11, 13, 15 and 23-30 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the Imai reference (U.S. Patent No. 6,344,675). This rejection is respectfully traversed for the following reasons.

The Examiner has alleged that the Imai reference discloses all the features of the claims, but has acknowledged that the reference fails to expressly teach (1) that the ratio of metallic silicide (or cobalt silicide) having the lowest resistance among stoichiometric metallic silicide is X_0 to Y_0 , and X , Y , X_0 and Y_0 satisfy the inequality: $(X/Y) > (X_0/Y_0)$; (2) a ratio of cobalt to silicon is 1 to α ($1 < \alpha < 2$); and (3) a contact specific resistance between the metallic silicide layers and the impurity layers is less than $1 \times 10^{-7} \Omega - \text{cm}^2$. The Examiner has however alleged that "the selection of the claimed stoichiometric ratio and specific resistance is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the above-mentioned stoichiometric ratio and resistance to arrive at the claimed invention". Applicants respectfully disagree for

the following reasons.

As described on page 3 of the present application, when the specific contact resistivity between a metallic silicide layer and a silicon layer exceeds $1 \times 10^{-7} \Omega - \text{cm}^2$, and the thickness of the SOI layer located under the metallic silicide layer is less than 10nm, the parasitic resistance would be increased so as to increase a resistance of a diffusion layer. As a result, the drive current of an SOI-FET would be reduced. Currently, no metallic materials which have a specific contact resistivity less than $1 \times 10^{-7} \Omega - \text{cm}^2$ have been known. It is therefore required that the SOI-FET layer be comprised of a silicide layer and a non-silicide layer greater than 10nm in a diffusion layer.

As described beginning on page 4 of the present application, it is an object of the present invention to provide a field effect transistor having suitable drive current adaptable for use with microscopic devices. In order to achieve this object, a field effect transistor having metallic silicide layers is provided, wherein the bottom surfaces of the metallic silicide layers respectively extend to bottom surfaces of the semiconductor layer, whereby a ratio of the metal to the silicon in the metallic silicide layers is X to Y, and wherein the ratio of the metal to the silicon of metallic silicide having the lowest resistance among stoichiometric metallic silicides is X0 to Y0, and X, Y, X0 and Y0 satisfy the inequality: $(X / Y) > (X0 / Y0)$. Such a field effect transistor is capable of restraining the reduction of the drive current, and can be fabricated to be of microscopic size. As further described on page 7 of the present application, metallic

silicides of the present invention are comprised of a CoSi_z layer for example, in which a ratio of cobalt silicon is 1 to z ($1 < z < 2$). In other words, the ratio of metal to silicon in the metallic silicide layer is X to Y, and meets the above noted inequality.

Manual of Patent Examining Procedure section 2143 sets forth guidelines with respect to the basic requirements of a *prima facie* case of obviousness. As described, to establish a *prima facie* case of obviousness, there must first be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. The prior art reference (or references when combined) must teach or suggest all the claim limitations. As further set forth in MPEP section 2143.01, obviousness can only be established by combining **or modifying the teachings of the prior art** to produce the claimed invention when there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.

As further set forth in MPEP section 2143.01, the mere fact that references **can** be modified does not render the resultant combination obvious, unless the prior art also suggests the desirability of the combination or modification. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Also of interest, in *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000), the Court reversed an obviousness rejection involving a technologically simple concept because there was no finding as to the principal or specific understanding within the knowledge of a skilled artisan that

would have motivated the skilled artisan to make the claimed invention.

Applicants respectfully submit that the Imai reference provides no suggestion or motivation to modify the teaching therein to provide (1) that a ratio of metallic silicide having the lowest resistance among stoichiometric metallic silicides is X_0 to Y_0 , and X , Y , X_0 and Y_0 satisfy the inequality: $(X / Y) > (X_0 / Y_0)$; (2) a ratio of cobalt to silicon that is 1 to α ($1 < \alpha < 2$); or (3) a contact specific resistance between metallic silicide layers and impurity layers that is less than $1 \times 10^{-7} \Omega - \text{cm}^2$. The Examiner has merely alleged in hindsight that the selection of these claimed features would have been obvious by way of routine experimentation. However, there is no teaching, suggestion or motivation that can be found either explicitly or implicitly in the Imai reference, or any knowledge generally available to one of ordinary skill established by the Examiner, that would lead one of ordinary skill to modify the Imai teaching as suggested by the Examiner.

Particularly, the Imai reference as relied upon by the Examiner does not consider or even remotely address (1) metallic silicide ratios, (2) ratios of cobalt to silicon, or (3) contact specific resistance between metallic silicide layers and impurity layers, and thus clearly does not suggest or teach that these factors can be used to restrain reduction of drive current to facilitate miniaturization. Accordingly, since the Imai reference does not even remotely consider these concepts, there clearly can be no teaching, suggestion or motivation derived from the reference to modify the teaching therein to meet the above noted claim features.

Moreover, although the Examiner has asserted that such modifications could somehow be arrived at by way of routine experimentation, the Examiner has failed to establish why one of ordinary skill would be motivated to modify these various aspects of the Imai reference to meet the claimed features. The Examiner has failed to establish a principal or specific understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention.

Accordingly, Applicants respectfully submit that in absence of established motivation as provided in the prior art of record, the Examiner has merely relied upon impermissible hindsight to modify the Imai reference to meet the above noted claim features. Applicants therefore respectfully submit that respective independent claims 1, 3, 5, 7, 9, 11, 13 and 15 would not have been obvious in view of the prior art as relied upon by the Examiner, and that this rejection of claims 1, 3, 5, 7, 9, 11, 13, 15 and 23-30 is improper for at least these reasons.

Claims 2, 4, 6, 8, 10, 12, 14 and 16 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the Imai reference, in further view of Applicants' admitted prior art. Applicants respectfully submit that the admitted prior art as herein relied upon by the Examiner does not overcome the above noted deficiencies of the Imai reference. Accordingly, Applicants further respectfully submit that claims 2, 4, 6, 8, 10, 12, 14 and 16 would not have been obvious in view of the prior art as relied upon by the Examiner taken singularly or together, and that this rejection is improper for at least these reasons.

Claims 31-34

Applicants respectfully submit that claims 31-34, as respectively dependent upon claims 5, 7, 13 and 15, distinguish over and would not have been obvious in view of the prior art as relied upon by the Examiner, at least by virtue of dependency on the claims from which they depend, for the reasons as set forth above.

Conclusion

The Examiner is respectfully requested to reconsider and withdraw the corresponding rejections, and to pass the claims of the present application to issue, for at least the above reasons.

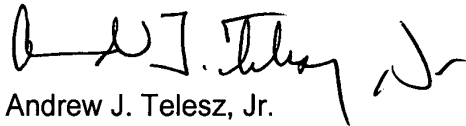
In the event that there are any outstanding matters remaining in the present application, please contact Andrew J. Telesz, Jr. (Reg. No. 33,581) at (703) 715-0870 in the Washington, D.C. area, to discuss these matters.

Pursuant to the provisions of 37 C.F.R. 1.17 and 1.136(a), the Applicants hereby petition for an extension of two (2) months to February 25, 2004, for the period in which to file a response to the outstanding Office Action. The required fee of \$420.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment for any additional fees that may be required, or credit any overpayment, to Deposit Account No. 50-0238.

Respectfully submitted,

VOLENTINE FRANCOS, P.L.L.C.



Andrew J. Telesz, Jr.
Registration No. 33,581

AJT:dmc

VOLENTINE FRANCOS, P.L.L.C.
12200 Sunrise Valley Drive, Suite 150
Reston, Virginia 20191
Telephone No.: (703) 715-0870
Facsimile No.: (703) 715-0877

Enclosures: Copy of Claim of Priority Letter
Copy of dated, stamped postcard receipt
Copy of Information Disclosure Statement and PTO-1449 form
Copy of dated, stamped postcard receipt